

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:  
a base body made of an organic high polymer material;  
5 an oxide electrode film on said base body; and  
a semiconductor thin film on said oxide electrode film, which contains at least one kind of group IV elements,  
wherein no granular products each having a diameter not smaller than 3 nm are substantially contained  
10 at the boundary between said oxide electrode film and said semiconductor thin film.
2. The semiconductor device according to claim 1  
wherein no granular products each having a diameter not smaller than 1 nm are contained at the boundary between said  
15 oxide electrode film and said semiconductor thin film.
3. The semiconductor device according to claim 1  
wherein said base body is a transparent base body.
4. The semiconductor device according to claim 1  
wherein said oxide electrode film is a transparent electrode  
20 film.
5. The semiconductor device according to claim 1  
wherein said oxide electrode film is made of ITO, tin oxide, tin oxide doped with fluoric acid, zinc oxide o zinc oxide-aluminum oxide.
- 25 6. The semiconductor device according to claim 1  
wherein part of said semiconductor thin film near the boundary between said oxide electrode film and said semiconductor thin film is stacked in a non-reducing

atmosphere.

7. The semiconductor device according to claim 1  
wherein part of said semiconductor thin film near the  
boundary between said oxide electrode film and said  
5 semiconductor thin film is stacked in an atmosphere not  
containing hydrogen gas.

8. The semiconductor device according to claim 1  
wherein part of said semiconductor thin film near the  
boundary between said oxide electrode film and said  
10 semiconductor thin film is stacked by sputtering not using  
hydrogen gas.

9. The semiconductor device according to claim 1  
wherein part of said semiconductor thin film near the  
boundary between said oxide electrode film and said  
15 semiconductor thin film is stacked in an atmosphere not  
containing hydrogen gas, and at least a part of the other  
part of said semiconductor thin film is stacked by  
plasma-enhanced chemical vapor deposition.

10. The semiconductor device according to claim 1  
20 wherein said semiconductor thin film is an amorphous  
semiconductor thin film.

11. The semiconductor device according to claim 1  
wherein said semiconductor thin film is made of amorphous  
silicon hydride, amorphous germanium hydride, amorphous  
25 silicon germanium hydride or amorphous silicon carbide  
hydride.

12. The semiconductor device according to claim 1  
wherein said semiconductor device is a thin-film

photovoltaic device.

13. The semiconductor device according to claim 1 wherein said semiconductor device is a thin-film solar battery.

5 14. A semiconductor device comprising:

a base body made of an organic high polymer material;

an oxide electrode film on said base body; and

a semiconductor thin film on said oxide electrode

10 film, which contains at least one kind of group IV elements,

wherein said semiconductor thin film is stacked in a non-reducing atmosphere in an initial period of deposition thereof.

15 15. The semiconductor device according to claim 14

wherein said base body is a transparent base body.

16. The semiconductor device according to claim 14

wherein said oxide electrode film is a transparent electrode film.

17. The semiconductor device according to claim 14

20 wherein said oxide electrode film is made of ITO, tin oxide, tin oxide doped with fluoric acid, zinc oxide or zinc oxide-aluminum oxide.

18. The semiconductor device according to claim 14

25 wherein part of said semiconductor thin film near the boundary between said oxide electrode film and said semiconductor thin film is stacked in a non-reducing atmosphere.

19. The semiconductor device according to claim 14

wherein part of said semiconductor thin film near the boundary between said oxide electrode film and said semiconductor thin film is stacked in an atmosphere not containing hydrogen gas.

5 20. The semiconductor device according to claim 14 wherein part of said semiconductor thin film near the boundary between said oxide electrode film and said semiconductor thin film is stacked by sputtering not using hydrogen gas.

10 21. The semiconductor device according to claim 14 wherein part of said semiconductor thin film near the boundary between said oxide electrode film and said semiconductor thin film is stacked in an atmosphere not containing hydrogen gas, and at least a part of the other  
15 part of said semiconductor thin film is stacked by plasma-enhanced chemical vapor deposition.

22. The semiconductor device according to claim 14 wherein said semiconductor thin film is an amorphous semiconductor thin film.

20 23. The semiconductor device according to claim 14 wherein said semiconductor thin film is made of amorphous silicon hydride, amorphous germanium hydride, amorphous silicon germanium hydride or amorphous silicon carbide hydride.

25 24. The semiconductor device according to claim 14 wherein said semiconductor device is a thin-film photovoltaic device.

25. The semiconductor device according to claim 14

wherein said semiconductor device is a thin-film solar battery.

26. A manufacturing method of a semiconductor device having a base body made of an organic high polymer material;  
5 an oxide electrode film on said base body; and a semiconductor thin film on said oxide electrode film, which contains at least one kind of group IV elements, comprising:

a step of stacking said semiconductor thin film in a non-reducing atmosphere in an initial period of  
10 deposition thereof.

27. The manufacturing method of a semiconductor device according to claim 26 wherein said base body is a transparent base body.

28. The manufacturing method of a semiconductor  
15 device according to claim 26 wherein said oxide electrode film is a transparent electrode film.

29. The manufacturing method of a semiconductor device according to claim 26 wherein said oxide electrode film is made of ITO, tin oxide, tin oxide doped with fluoric  
20 acid, zinc oxide or zinc oxide-aluminum oxide.

30. The manufacturing method of a semiconductor device according to claim 26 wherein said non-reducing atmosphere is an atmosphere not containing hydrogen gas.

31. The manufacturing method of a semiconductor  
25 device according to claim 26 wherein said semiconductor thin film is stacked by sputtering not using hydrogen gas in an initial period of deposition thereof.

32. The manufacturing method of a semiconductor

device according to claim 26 wherein sputtering not using hydrogen gas is used for deposition of initial part of said semiconductor thin film, and plasma-enhanced chemical vapor deposition is used for deposition of at least a part of the remainder portion of said semiconductor thin film.

33. The manufacturing method of a semiconductor device according to claim 26 wherein said semiconductor thin film is an amorphous semiconductor thin film.

34. The manufacturing method of a semiconductor device according to claim 26 wherein said semiconductor thin film is made of amorphous silicon hydride, amorphous germanium hydride, amorphous silicon germanium hydride or amorphous silicon carbide hydride.

35. The manufacturing method of a semiconductor device according to claim 26 wherein said semiconductor device is a thin-film photovoltaic device.

36. The manufacturing method of a semiconductor device according to claim 26 wherein said semiconductor device is a thin-film solar battery.